by Dr. Richardson had reference to the mode of action of this poison. Were the effects produced through the blood, or by the nerves direct? The speaker said that he had been led to the conclusion, from previous experiments, that all poisons were brought into action through the blood; but this very commonly accepted theory did not explain the immediate and powerful action which follows the exhibition of the minutest dose of the nitrite of amyle. He thought, therefore, that the action was immediately on the nervous system, and that such action, transferred to the filaments of nerves surrounding the arteries, paralyzed the vaso nerves, on which the heart immediately injected the vessels causing the peculiar redness of the skin and the other phenomenon that had been narrated. Dr. Richardson, in conclusion, said that nitrite of amyle, like to chloroform twenty years ago, was only to be considered a physiological curiosity. It might by its action suggest the cause of trance, and of what was called hysterical unconsciousness, and it might explain the mode by which certain analogous substances produced their effects on the organism. It had been suggested—naturally suggested—that in fainting, as from loss of blood or from fear, the inhalation of the nitrite of amyle might be of service. He (the author) did not, however, at the present moment recommend its use in medicine, because of the intensity of its action. This last point was at the present time under his inquiry, and he would report further results at the next meeting of the Association.—*Med. Times and Gaz.*, Sept. 26, 1863.

10. *Liquor Bismuthi.*—Mr. Chas. R. C. Tichborne read before the Pharmaceutical Society in December last the following account of a new preparation of bismuth, which is getting much in vogue in Great Britain, and is highly spoken of by many practitioners:—

"Under the name of Liq. Bismuthi there has been introduced to the notice of the faculty a preparation, which purports to possess great advantage over the ordinary basic nitrate. The desirable points in this preparation are—first, its solubility; second, its slight taste; and third, its alkalinity. It has also the peculiarity of not being precipitable by water.

I felt the desirability of such a mode of exhibiting bismuth, and therefore made an analysis of the solution for my own information; and as it possesses certain phases of interest, I now take this opportunity of placing it before the members of the Pharmaceutical Society.

A qualitative analysis elicited the following: The solution contained bismuth, citric acid, and ammonia; not a trace of nitric acid could be detected in the solution. Liq. bismuthi is therefore probably a solution of a basic salt, having a composition analogous to $3MOCi+MO$; one of the bases, MO, being replaced by BiO_3; it is made from the recently precipitated and well-washed oxide. From the peculiarity of having to deal with an alkaline bismuthic solution, direct precipitation with sulphide of ammonium was employed to determine the amount of bismuth present; this gave, on washing and drying, 0.327 grammes of BiS_3 in the fluid half-ounce, which represents 1.114 grains of the teroxide as being present in the drachm. Now, although the circular which accompanies the liq. bismuthi states that ʒj is equivalent to a full dose (fifteen to twenty grains) of the insoluble trisnitrate, I do not think such can be the case. The idea evidently is that the metal, when in the soluble form, is much more active than the ordinary insoluble modification, and there can be no doubt that it is so to a certain extent; but I should consider three grains to the drachm as the minimum dose; even more than this quantity may be easily introduced into such a solution as the above. The following is probably the mode pursued in making this solution: 430 gains of metallic bismuth are dissolved in a sufficient quantity of nitric acid, and this solution of ternitrate of bismuth is then precipitated with ammonia, and the resulting hydrated oxide well washed; 480 grains of citric acid are then exactly neutralized with ammonia, and the moist oxide is gradually added to the boiling solution of citrate of ammonia. The oxide is slowly but perfectly taken up. Ammonia is slowly evolved during the boiling (probably from the decomposition of the citrate of ammonia *per se*), but the solution becomes slightly acid, and remains so until the completion of the process. The solution is then neutralized with ammonia, and the whole is made to measure one pint. This solution will contain three grains of BiO_3, to the ʒj. It is more elegantly made by dissolving the citrate of bismuth in citrate of ammonia.[1]

Tartaric acid has also a similar action upon bismuth.

There seems to be a limit to the solubility of chemically pure citrate of bismuth; but the solubility is wonderfully increased by the presence of mineral acids. This is no doubt due to the greater solubility of the salts formed by the latter acids in citrate of ammonia.

The reactions of this bismuthic solution are as follows:—

Ammonia and carbonate of ammonia give no precipitate. Potash and soda, or the carbonates of these alkalies, give precipitates insoluble in an excess of the precipitant. Nitric, sulphuric, and hydrochloric acids give precipitates soluble in an excess of the respective acids, and reprecipitable on neutralization with ammonia. These precipitates are also soluble on the further addition of ammonia. Water gives no precipitate. Sulphide of ammonium throws down the whole of the bismuth as sulphide.

As the reactions of citric and tartaric acids are at present little known, it is my intention to investigate the matter further, particularly with a view to its analytical bearing; but in the meantime I place before you the results of my investigation of the liq. bismuthi.

Mr. Schacht (of Clifton) said that although the author of the paper had not thought fit to mention his name in connection with the liquor bismuthi examined, there could be no doubt, from the quotation made from the circular, that the preparation the meeting had just heard so freely discussed was that made by himself. Assuming this to be the case, he could state that the author had well performed his task in submitting it to analysis. The preparation sold as liquor bismuthi (Schacht), consisted of bismuth oxide, citric acid, and ammonia, and the quantity of oxide of bismuth present was one grain in the drachm. This, however, had been published in the *Lancet* several months ago (?). A fact so easy of investigation he had never attempted to keep secret, but on the contrary he had told its composition to every medical man with whom he had conversed on the subject. He had adopted the name "Liquor Bismuthi (Schacht)," partly because having been fortunate several years ago in discovering this elegant method of holding bismuth in permanent solution, he was anxious to reap some measure of reward in the credit which would attach to so distinct an improvement as he believed this preparation to be; and partly also because as the article can only exist in the form of solution, it was convenient that the profession should be invited to prescribe a medicine of one definite strength. In answer to the author's suggestion that it should be made three times as strong as he (Mr. Schacht) had been accustomed to make it, he would observe that the quantity indicated as a dose—one drachm—was easy both to remember and to dispense, and he had abundance of evidence to prove that in such doses it was efficient, in many cases succeeding where full doses of from five to twenty grains of the trisnitrate had failed. He claimed the credit, such as it was, of having been the first to prepare and introduce to the profession a permanently fluid form of bismuth, and as his preparation had been a good deal employed during the last five or six years it would be a great pity to alter its strength."—*Dublin Med. Press*, Jan. 20, 1864, from *Pharm. Journ.*

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11. *Trichiniasis in Germany.*—In the original department of this Number will be found an interesting account, by a correspondent, of the recently dis-

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[1] Citrate of bismuth is a very insoluble salt, got by the double decomposition of citrate of potash or soda, and ternitrate of bismuth. The citrate, as made in this manner, is extremely soluble in ammonia or a solution of citrate of ammonia.